Progress in Heart, Lung, and Blood Research

Blood Safety

Blood has been called the river of life, and for good reason. Blood transports life-sustaining oxygen and nutrients. Blood automatically forms a clot when we get cut. Blood helps our immune system fight off germs.

Each year, nearly 5 million Americans need a blood transfusion. Fortunately, the vast majority of transfusions are effective and cause no harm — thanks in part to research supported by the National Heart, Lung, and Blood Institute (NHLBI).

Such research has made many important contributions to transfusion medicine and blood banking methods, and these improvements have had a major impact on the nation's public health. Examples include new methods to test donated blood for contamination by viruses such as human immunodeficiency virus (HIV) and hepatitis, new donor-screening safeguards, and new ways to track the availability of blood for donation.

Today, careful screening at blood banks protects the nation's blood supply. Blood infected with viruses such as HIV is now identified using nucleic acid testing that was developed in part through NHLBI-funded research. Before this method was available, screening donated blood for viruses relied on an imperfect technique that identified circulating antibodies. However, it can take three weeks or more for a person to develop antibodies after a viral infection, meaning that infected blood could test as safe during this "window period." Other NHLBI-supported advances — such as the development of modern, user-friendly, computer-assisted donor-screening methods — further improve safety by providing blood donors with a private, secure environment to answer questions about exposure to potential infectious threats.

The nation's blood supply is the safest it has ever been, but risks remain, so we cannot let our guard down. Ongoing NHLBI-supported research monitors potential threats such as dengue virus, the parasite Babesia, and other illnesses that can be spread through blood transfusions. Other NHLBI-supported studies seek to determine whether variations in the length of time that blood is stored affect transfusion safety and effectiveness.

Imagine the Future…

New blood-cleansing methods remove contaminants from donor blood.

Artificial blood developed for use in combat is used routinely in ambulances and in hospitals.

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